

THE DISAPPEARING STREETS

The city of Sentinel had ordered surfacing with hot mix asphalt for their streets. Next spring, almost all of the hot mix had disappeared. How was this possible, and who should pay?

THE DISAPPEARING STREETS

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Part A

Jack Bell was reluctant to undertake work which promised a poor financial return but, on the other hand, he hated to turn down anything. Frank Richards, a friendly consulting engineer from a large firm, had just called him and given him the name of Malcolm Olde, attorney for the city of Sentinel, a town of about 14,000 population. Frank had said that something had happened to Sentinel's streets and Olde needed an expert to look into it. Jack Bell's laboratories had been involved in various materials consulting work for about ten years and part of the work involved all types of testing and mix design work for various kinds of paving. Jack was a registered professional engineer and had been directly involved in many types of bituminous paving jobs. Apparently Frank's employer simply did not want Frank to spend his time or have any other employees spend time on such a project because normally the fee for this kind of work seemed hardly worth the effort.

Later that day Jack called Malcolm Olde to find out more of what was involved in this particular job. Mr. Olde informed Jack that the city of Sentinel had contracted for

about \$240,000 worth of surfacing with hot mix asphalt on their streets the previous year and that this spring when the snow melted most of the almost new hot mix had disappeared. He told Jack that he had a file of everything that was known concerning the job and that he would appreciate it if Jack would read the file so that they could talk in greater detail about what to do.

On a trip a few weeks later Jack stopped by Mr. Olde's office in New City and picked up the file and spent the day reading and studying the material. Jack then called Mr. Olde and told him that it looked as if he could draw some obvious conclusions from what the files contained. However, he would like to make a visit to Sentinel and do some on-site investigating and run some tests before he said anything rash. Mr. Olde agreed. Jack made arrangements to make the trip to Sentinel in the near future.

It was a nice warm September afternoon when Jack drove into Sentinel and had an ice cream soda at Swenson's Pharmacy. From driving into the parking place, and glancing around quickly, it was obvious that whatever had been on the streets now existed only in small patches. After finishing the soda Jack drove around Sentinel, over the area that had been surfaced, and was unable to find any of

the paving material that was larger than 3' X 3' in, scabby patches here and there.

QUESTIONS

Part A

1. Who are the logical experts to be involved in potential court cases where fees are perhaps small in relation to the complexity of the situation?
2. Is the experienced professional engineer, wherever he may work, obligated to become an expert witness from time to time? If so, under what conditions or circumstances?
3. What is your analysis of the problem?

THE DISAPPEARING STREETS - Part B

From the beginning, after reading Mr. Olde's file, Jack had felt that one answer to the disappearing streets was that a hydrophyllic aggregate had been used in the hot mix which had been laid in Sentinel. In the presence of water during the spring snow melt, the asphalt would have stripped off the aggregate. Water rushing toward the gutters then carried the uncemented pavement materials into the sewers. It seemed from his on-site inspection that this was an entirely feasible conclusion. The question that entered Jack's mind was "how could anyone allow such a thing to happen?" It did not seem reasonable that anyone in this day and age would use such an aggregate and not take rather simple precautions to avoid the disastrous consequences.

Jack stopped by the office of Jerry Truax, State Materials Engineer for the district around Sentinel. After introducing himself and telling Jerry what he was looking into, he was pleased to find that Jerry became a goldmine of information. Jerry knew all about the fact that the streets had disappeared and he had a very good theory as to why it had happened. The aggregate that had been used in the hot mix asphalt had come from a gravel pit just north of town which the State itself had used many times in preparing hot mix asphalt. Jerry theorized that the engineers and contractor involved in the Sentinel street paving had either not known that the aggregate was hydrophyllic or certainly

did not know what the State did to keep a mix from stripping. He explained "after we put down a re-surfacing section of hot mix on a highway using aggregate from that gravel pit we watched it very closely. Normally we let it go without doing anything to it until it gets toward winter time. The rain normally runs off so rapidly that it does not really affect it too much but we are careful of the snow and snow melt. Generally," he said, " we put a single or double seal coat on top of this type of surfacing to keep the snow and snow melt from stripping the asphalt like it apparently did here in Sentinel." Jack grunted acknowledgement of what Jerry had told him. He could not help but conclude that Jerry probably had the right answer.

After leaving Jerry's office Jack wandered over to City Hall and found Paul Brock, the City Manager. Paul was also very willing to talk about the disaster that had occurred in Sentinel. Paul told Jack that the Everson and Associates firm of consulting engineers called on the city regularly to promote design work. He said they had a number of registered professionals on their staff and Sam Leed, the person who had called on Sentinel, was an extremely likeable and apparently able engineer. Although Sentinel had had design work done by other consulting engineers, they had decided it was time to try the Everson & Associates firm as their consultants when the City Council had

decided to do something about re-surfacing the rough streets in Sentinel. They had retained Everson & Associates to do the engineering work. In essence, their contract with the city called for them to survey all of the streets, to draw up detailed plans of the entire area to be re-surfaced and to prepare the specifications and contract documents for letting the contract. They were to inspect the construction and to monitor the project in all of its technical details. Mr. Brock was very upset about the situation as he talked to Jack and was very hopeful that something could be done so that Sentinel ended up with the paving they had already paid for. He had a lot of faith in Mr. Olde and felt that the city would probably follow his advice. He assured Jack that if there were anything else that he could tell him or that he could furnish, he would be happy to do so. He let Jack take the brochure that Everson & Associates had filed with the city. A review of this information revealed that none of the principals of the firm, nor the firm itself, had been involved in a bituminous paving job - at least up to the time the brochure had been printed.

Jack went out to the gravel pit and got several representative samples of the material. When he returned to his office he called Mr. Olde and asked for a copy of some specific documents pertaining to the hot mix design and materials testing that had taken place prior to and during the laying of the hot mix. When he received the copies

he was able to determine from the design report which had been submitted to Everson & Associates by Materials Engineering Inc. that a stripping test had not been run on the aggregate that was used in designing the mix. Jack's own tests indicated that the material was definitely hydrophyllic, and would have to be used with caution in making hot mix. There are ways to use it by putting additives in the asphalt cement or as Jerry Truax had indicated. The design report made no mention of either.

After further testing and study Jack called Malcolm Olde and briefly told him that his conclusion was that Everson & Associates, and any affiliates, had erred in allowing the hot mix to be made with hydrophyllic aggregate without the necessary precautions. He said Mr. Olde would have a good case if he decided to sue Everson & Associates for whatever he could get toward the \$240,000. Mr. Olde responded "that may be so but probably Everson & Associates, operating out of Arrowhead (10,000 pop.) is not likely to have the \$240,000 with which to replace the streets which have disappeared." Jack had to agree but felt that Everson & Associates were the main culprits for allowing such a thing to happen when they were supposed to be birdogging all the details of the project from a technical standpoint. Malcolm Olde injected the idea "what if we sued both the contractor (Masterson Blacktop, Inc.) and Everson & Associates and see what we could get out of both of them?" Jack said this

would take a little more study on his part and he would look into it if Mr. Olde would send him all of the information about Masterson Blacktop, Inc. from his file.

After receiving and studying the information on Masterson, Jack concluded that Masterson, an experienced paving contractor, should have at least independently tested the aggregate during the time that he was stockpiling the materials. He had moved his equipment into Sentinel from a neighboring state to do the paving. From the record, Masterson had begun the 30,000 tons of paving in the late summer of the previous year. The daily plant records which had been furnished to Jack showed that there were numerous occasions during the time that the plant was in operation that the temperature of the mix got above 350°F (154.4°C). This had happened randomly but frequently and although the specifications called for a maximum of 300°F (148.9°C), nothing in the records indicated rejection of overheated mix by the inspector.

For various reasons, the paving operation had taken until the middle of October. The 30,000 tons had been laid and compacted, and the project shut down just the day before the first snow of the season had occurred in Sentinel. Another circumstance which could have affected the job somewhat drastically was the fact that Sentinel had no provision for removing snow from the streets. From that first

snow on into the winter it snowed considerably, as it often does in Sentinel. The snow simply stacked up and except for a little bit of shovelling in driveway entrances and along curbs, the traffic compacted the snow and it remained in place until the spring thaw.

Jack deliberated over the entire situation as he knew it from personal inspection, from the files, and from various conversations. He was torn between the fact that he felt that Everson and Associates should be the prime target and the fact that, if they were, the taxpayers of Sentinel were probably going to end up without very much money even if Mr. Olde won the case. He called Malcolm Olde and told him that this was more of a legal matter than an engineering matter. He said if he (Mr. Olde) filed suit against both Masterson and Everson and if he (Jack) were called upon to testify during the trial he felt that he could substantiate the fact that the plant that Masterson used apparently mal-functioned frequently. He could testify that the overheating certainly could contribute to a bad condition so far as the usable life of the paving was concerned. Mr. Olde told Jack that he probably was going to file suit against both parties and that he would be in touch as things developed.

QUESTIONS

Part B

1. Should consulting engineering firms be required to carry errors and omissions insurance so that their mistakes could be paid for?
2. How important is experience in the firm when consulting engineers take on new projects?
3. Should Everson and Associates have hired an outside expert to advise them on items in which they were inexperienced?
4. How do you think this should be resolved?

About a year later Mr. Olde called Jack and said that the case of the City of Sentinel, versus Masterson Blacktop, Inc. and Everson and Associates had been placed on the court docket in New City and it was due to come to trial during the next month. He asked Jack if he had any new thoughts about the situation and also asked if he felt it necessary for them to get together to discuss some of the technicalities before the trial. Jack said he thought that this would be a good idea since he had not given it much thought recently. They agreed that in the week just prior to the trial they would get together and Mr. Olde would tell Jack how he planned to pursue the trial so that Jack could be prepared.

About a week before the trial Jack made a trip to New City. He and Mr. Olde went over the details. Jack understood how the trial would proceed but was once again amazed at the way the legal system operated in the pursuit of justice.

The day before the trial was to begin Mr. Olde again called. He told Jack that there was nothing new and it appeared that the trial would take place as scheduled and reminded Jack to be present in New City the next day. Later that day Jack was winding up other affairs in his office when Mr. Olde called again and said that attorneys for Masterson and for Everson had contacted him and were

talking about an out of court settlement. He said that they were willing to settle out of court for \$150,000. Twenty-Four thousand dollars of the amount would be from Everson and the balance from Masterson. (Jack mentally calculated that Everson would chip in more than their \$16,800 fee.) Olde asked Jack what he thought about this offer and if he had any words of advice. This seemed like an unusual question to Jack and one he didn't feel confident to answer. He asked Mr. Olde what he felt about the chances of winning or losing the whole \$240,000. Mr. Olde replied that you always take a chance when you go into court. So much depends on the jury that it is not always possible to win even if everything seems to be on your side. He felt that nearly everything would be in their favor but there was always the chance that they would lose the case and get nothing. There could always be delays in some manner that would let the case drag on for a long time. Jack felt that Mr. Olde really wanted him to say "take the \$150,000 and run." All that he felt competent to offer was "If there is a possibility that the city would either not get as much as \$150,000 or would get nothing, then it seems logical to take their offer." The citizens of Sentinel could get as much new paving as possible for the \$150,000. The \$90,000 they would lose in the deal would have to be chalked up to experience.

QUESTIONS

Part C

1. How much responsibility should the contractor take in a case like this?
2. Where does a small consulting firm draw the line in soliciting work?
3. How involved can an expert consultant like Jack get when it comes to legal value judgements?
4. How can cities like Sentinel protect themselves from inexperience on the part of consultants?
5. Was Mr. Olde's recommendation correct?

EPILOGUE

Mr. Olde, with the concurrence of the City Manager and the City Council of Sentinel, settled the case out of court for \$150,000. At a later date on a different project Jack visited Sentinel and had the opportunity to talk to Paul Brock about the disappearing streets. Mr. Brock and others were still very upset by the fact that they had been shortchanged as a result of the consulting job that they had given to Everson and Associates. He told Jack about two other cases where other consultants had failed to come up to the standards that the city had expected of them. He said, "We just don't know whether we will ever hire another consultant or not. The experiences we have had with engineering consultants have left a very bad taste in our mouths."

Jack's firm billed Mr. Olde \$800.00 plus travel expenses for the time, testing and advice. What part of the \$150,000 Mr. Olde received from the City was never revealed.

QUESTION ON EPILOGUE

1. While Brock and the Sentinel City Council were understandably upset, were they at fault in any way which contributed to the situation?

INSTRUCTOR'S NOTE

The solicitation of work by consulting firms is a part of the normal day to day activity of the firm. Often someone in the firm who has a feel for promotion is designated to beat the bushes. With the names of all of the elected or appointed officials in his possession, he makes the "rounds" to pick up information, cement relationships, and ask for contracts to do consulting.

Very seldom is a hard sell employed. The promoter, be he engineer or not, tries to project an attitude of professional competence with plenty of backup at the home office. Unfortunately there are some just beginning and marginal firms which do not have the backup. More often than not these firms will take on work which would be best left to others.

The "professionals" in the consulting business have learned that it is best to hire outside experts to handle some work which comes their way. They will at least retain knowledgeable people who can steer the firm away from areas of danger. Greed may overcome common sense for other firms and thus they may be unaware of the dangers.

Officials of the governmental subdivisions are certainly not blameless. A number of ways are open to them to ascertain whether or not consultants are competent. One of these is simply direct inquiry about personnel experience. If they are not able to tell one engineer from another after this, they should retain others who can to lead them. If Brock and other officials had followed a more prudent course in consultant selection, it is probable that they would not have had their problem. It is not unheard of to hire other professionals to review plans and specifications before the money is spent for construction.

Large doses of common sense would be one prescription for both sides to avoid additional problems. The beginners will keep coming and the officials will be ever changing.